

## Claims:

- Handwritten: 1. 2. 3. 4.*
1. A personal wearable speaker system, comprising:
    - a) a garment including a first duct having a first dimension, a second dimension which is perpendicular to said first dimension, and a third dimension which is perpendicular to both said first dimension and said second dimension, said first duct having a second dimension to third dimension ratio of not more than three to one, said first duct defining a first duct chamber; and
    - b) at least one sound transducer mounted in said duct.
  2. A personal wearable speaker system according to claim 1, wherein:

said first duct is adapted to flex without pinching off said first duct chamber.
  3. A personal wearable speaker system according to claim 1, wherein:

said first duct is substantially round in cross-section.
  4. A personal wearable speaker system according to claim 1, wherein:

said at least one transducer comprises a first pair of transducers, and when said garment is worn by a wearer, said first pair of sound transducers face inward toward a body of the wearer.

5. A personal wearable speaker system according to claim 1, wherein:

said at least one transducer comprises a first pair of transducers, and when said garment is worn by a wearer, said first pair of sound transducers face outward toward an ear of the wearer.

6. A personal wearable speaker system according to claim 1, wherein:

said garment is one of a jacket, a vest, a coat, and a shirt.

7. A personal wearable speaker system according to claim 1, wherein:

said garment has a second duct having a first end and a second end, said second duct defining a second duct chamber; and further comprising

c) at least one second sound transducer mounted in said second duct.

8. A personal wearable speaker system according to claim 7, wherein:

said second duct is adapted to flex without pinching off said second chamber.

9. A personal wearable speaker system according to claim 7,  
wherein:

said second duct is substantially round in cross-section.

10. A personal wearable speaker system according to claim 7,  
wherein:

said at least one second sound transducer comprises a second pair of sound transducers, and when said garment is worn by a wearer, at least one of said first pair and said second pair of sound transducers face inward toward a body of the wearer.

11. A personal wearable speaker system according to claim 7,  
wherein:

said at least one second sound transducer comprises a second pair of sound transducers, and when said garment is worn by a wearer, both said first pair and said second pair of sound transducers face inward toward a body of the wearer.

12. A personal wearable speaker system according to claim 7,  
wherein:

a cross-section through said first duct has an area substantially smaller than a cross-section through said second duct.

13. A personal wearable speaker system according to claim 7,  
wherein:

said garment has a collar and one of said first duct and said second duct is attached to said collar of said garment.

14. A personal wearable speaker system according to claim 7,  
wherein:

said second duct has a cover at least partially around said second duct.

15. A personal wearable speaker system according to claim 14,  
wherein:

a first securing ring is coupled to said cover adjacent said first end of said second duct and a second securing ring is coupled to said cover adjacent said second end of said second duct, said first and second securing rings each being detachably coupled to said garment and at least partially securing said second duct to said garment.

16. A personal wearable speaker system according to claim 7,  
wherein:

said second duct defines at least one port.

17. A personal wearable speaker system according to claim 7, wherein:

a first securing ring is coupled to said second duct adjacent said first end and a second securing ring is coupled to said second duct adjacent said second end, said first and second securing rings each being detachably coupled to said garment and at least partially securing said second duct to said garment.

18. A personal wearable speaker system according to claim 7, further comprising:

d) an audio player; and

e) a transducer wire coupled to each of said sound transducers, said transducer wires electrically connecting said sound transducers with said audio player.

19. A personal wearable speaker system according to claim 18, further comprising:

f) a pocket attached to said garment, said audio player being positionable within said pocket.

20. A personal wearable speaker system according to claim 7, wherein:

said garment has a pair of shoulders, said second duct crosses one of said shoulders of said garment.

21. A personal wearable speaker system according to claim 1, further comprising:

d) a pair of second ducts and a pair of third ducts each pair having an inner duct and an outer duct, each of said inner duct and said outer duct of said pair of second ducts and said pair of third ducts having a first end and a second end attached to said garment, each of said inner duct and said outer duct of said pair of second ducts and said pair of third ducts having a first dimension, a second dimension which is perpendicular to said first dimension, and a third dimension which is perpendicular to both said first dimension and said second dimension, each of said inner duct and said outer duct of said pair of second ducts and said pair of third ducts having a second dimension to third dimension ratio of not more than three to one, each of said inner ducts of said pair of second ducts and said pair of third ducts defines an inner duct chamber and each of said outer ducts of said pair of second ducts and said pair of third ducts defines an outer duct chamber; and

e) at least one second sound transducer mounted in at least one of said pair of second ducts and at least one third sound transducer mounted in at least one of said pair of third ducts.

22. A personal wearable speaker system according to claim 21,  
wherein:

said first dimension of at least one of said inner duct and  
said outer duct of said pair of second ducts is greater than said  
first dimension of at least one of said inner duct and said outer  
duct of said pair of third ducts.

23. A personal wearable speaker system according to claim 1, further comprising:

d) a pair of second ducts and a pair of third ducts each pair having an inner duct and an outer duct, each of said inner duct and said outer duct of said pair of second ducts and said pair of third ducts having a first end and a second end attached to said garment, each of said inner duct and said outer duct of said pair of second ducts and said pair of third ducts having a first dimension, a second dimension which is perpendicular to said first dimension, and a third dimension which is perpendicular to both said first dimension and said second dimension, each of said inner duct and said outer duct of said pair of second ducts and said pair of third ducts having a second dimension to third dimension ratio of not more than three to one, each of said inner ducts of said pair of second ducts and said pair of third ducts defines an inner duct chamber and each of said outer ducts of said pair of second ducts and said pair of third ducts defines an outer duct chamber; and

e) at least one high frequency sound transducer mounted in each of said inner ducts and at least one low frequency sound transducer mounted in each of said outer ducts.



24. A personal wearable speaker system according to claim 23,  
wherein:

said high frequency sound transducers are mounted in each of  
said inner ducts adjacent a shoulder of said garment.

25. A personal wearable speaker system according to claim 23,  
wherein:

each of said inner ducts defines a sound port adjacent a  
shoulder of said garment.

26. A personal wearable speaker system, comprising:

a) a garment including at least a first duct having a first end  
and a second end attached to said garment, said first duct  
defining a first duct chamber; and

b) a first sound transducer mounted to said first end of said  
first duct; and

c) a second sound transducer mounted to said second end of said  
first duct.

27. A personal wearable speaker system according to claim 26,  
wherein:

said first duct is adapted to flex without pinching off said  
first duct chamber.

28. A personal wearable speaker system according to claim 26,  
wherein:

said first duct is substantially round in cross-section.

29. A personal wearable speaker system according to claim 26,  
wherein:

said second sound transducer faces inward toward a body of  
the wearer.

30. A personal wearable speaker system according to claim 26,  
wherein:

said first sound transducer faces outward toward an ear of  
the wearer.

31. A personal wearable speaker system according to claim 26,  
wherein:

said garment is one of a jacket, a vest, and a shirt.

32. A personal wearable speaker system according to claim 26, further comprising:

d) a second duct having a first end and a second end attached to said garment, said second duct defining a second duct chamber;

e) a third sound transducer mounted to said first end of said second duct; and

f) a fourth sound transducer mounted to said second end of said second duct.

33. A personal wearable speaker system according to claim 32, wherein:

said second duct is adapted to flex without pinching off said second duct chamber.

34. A personal wearable speaker system according to claim 32, wherein:

said second duct is substantially round in cross-section.

35. A personal wearable speaker system according to claim 32, wherein:

when said garment is worn by a wearer, at least one of said second and said fourth sound transducers face inward toward a body of the wearer.

36. A personal wearable speaker system according to claim 32,  
wherein:

when said garment is worn by a wearer, both said second and  
said fourth sound transducers face inward toward a body of the  
wearer.

37. A personal wearable speaker system according to claim 32,  
wherein:

a cross-section through said first duct has an area  
substantially smaller than a cross-section through said second  
duct.

38. A personal wearable speaker system according to claim 32,  
wherein:

said garment has a collar and one of said first duct and said  
second duct is attached to said collar of said garment.

39. A personal wearable speaker system according to claim 32,  
wherein:

said second duct has a cover at least partially around said  
second duct.

40. A personal wearable speaker system according to claim 39, wherein:

a first securing ring is coupled to said cover adjacent said first end of said second duct and a second securing ring is coupled to said cover adjacent said second end of said second duct, said first and second securing rings each being detachably coupled to said garment and at least partially securing said second duct to said garment.

41. A personal wearable speaker system according to claim 32, wherein:

said second duct defines at least one port.

42. A personal wearable speaker system according to claim 32, wherein:

a first securing ring is coupled to said second duct adjacent said first end and a second securing ring is coupled to said second duct adjacent said second end, said first and second securing rings each being detachably coupled to said garment and at least partially securing said second duct to said garment.

43. A personal wearable speaker system according to claim 32, further comprising:

- g) an audio player; and
- h) a transducer wire coupled to each of said sound transducers, said transducer wires electrically connecting said sound transducers with said audio player.

44. A personal wearable speaker system according to claim 43, further comprising:

- i) a pocket attached to said garment, said audio player being positionable within said pocket.

45. A personal wearable speaker system according to claim 32, wherein:

said garment has a pair of shoulders, said second duct crosses one of said shoulders of said garment.

46. A personal wearable speaker system according to claim 26, further comprising:

d) a pair of second ducts and a pair of third ducts each pair having an inner duct and an outer duct, each of said inner duct and said outer duct of said pair of second ducts and said pair of third ducts having a first end and a second end attached to said garment, each of said inner duct and said outer duct of said pair of second ducts and said pair of third ducts having a first dimension, a second dimension which is perpendicular to said first dimension, and a third dimension which is perpendicular to both said first dimension and said second dimension, each of said inner duct and said outer duct of said pair of second ducts and said pair of third ducts having a second dimension to third dimension ratio of not more than three to one, each of said inner ducts of said pair of second ducts and said pair of third ducts defines an inner duct chamber and each of said outer ducts of said pair of second ducts and said pair of third ducts defines an outer duct chamber; and

e) at least one high frequency sound transducer mounted in each of said inner ducts and at least one low frequency sound transducer mounted in each of said outer ducts.

47. A personal wearable speaker system according to claim 46,  
wherein:

said first dimension of at least one of said inner duct and  
said outer duct of said pair of second ducts is greater than said  
first dimension of at least one of said inner duct and said outer  
duct of said pair of third ducts.

48. A personal wearable speaker system according to claim 46,  
wherein:

said high frequency sound transducers are mounted in each of  
said inner ducts adjacent a shoulder of said garment.

49. A personal wearable speaker system according to claim 46,  
wherein:

each of said inner ducts defines a sound port adjacent a  
shoulder of said garment.



50. A personal wearable speaker system, comprising:

- a) a backpack having a front;
- b) a first duct attached to said front of said backpack, said first duct having a first end and a second end, said first duct defining a first chamber;
- c) a second duct attached to said front of said backpack opposite said first duct, said second duct having a first end and a second end, said second duct defining a second chamber;
- d) a first sound transducer mounted to said first duct adjacent said first end of said first duct;
- e) a second sound transducer mounted to said first duct adjacent said second end of said first duct;
- f) a third sound transducer mounted to said second duct adjacent said first end of said second duct; and
- g) a fourth sound transducer mounted to said second duct adjacent to said second end of said second duct.

51. A personal wearable speaker system, comprising:

- a) a vest including at least a first duct having a first end and a second end attached to said vest, said first duct defining a first duct chamber; and
- b) a first sound transducer mounted within said first end of said first duct; and
- c) a second sound transducer mounted within said second end of said first duct;
- d) a headband; and
- e) at least one sound transducer mounted to said headband.

52. A personal wearable speaker system for use with a portable player, comprising:

a garment having a first duct defining a first duct chamber, at least one sound transducer mounted in said duct, a first zipper portion electrically connected to said sound transducer, and a second zipper portion electrically connected to the player, said first and second zipper portions being mechanically interlockable.

53. A personal wearable speaker system for use with a portable player, comprising:

- a) a garment;
- b) a plurality of ducts coupled to said garment, at least one of said plurality of ducts having an undulating front surface; and
- c) a plurality of sound transducers each mounted in one of said ducts.

54. A modular personal wearable speaker system attachable to a garment and for use with a portable player, comprising:

- a) a plurality of ducts having a first end and a second end and defining a chamber therebetween;
- b) a plurality of sound transducers, said ducts each defining an opening into said chamber, said opening adapted to receive at least one of said sound transducers, wherein  
 said ducts are adapted to be interchangeably coupled to the garment, and said transducers are adapted to be interchangeably coupled to said ducts.